

A MONAZITE DEPOSIT IN THE BIG HORN MOUNTAINS
SHERIDAN AND BIG HORN COUNTIES, WYOMING

Location

The deposit, which comprises approximately 5,000 acres of claims, is located at an elevation of approximately 9,000 feet, Sections 17 through 31, T.56N., R.91W., near the headwaters of the Little Big Horn River and Porcupine Creek. The deposit may be easily reached by automobile by following Wyoming Highway 14 east from Lovell or U.S. Highway 14 west from Sheridan.

The claimant is the Mineral Development Company of Sheridan, Wyoming. K.S. Moore, 1040 S. Thurmand, Sheridan, Wyo., is their correspondent.

Geology and Mineralization

The monazite is found in placers of Quaternary alluvium and also in the lower fifty feet of the Cambrian Deadwood formation.

The most productive portion of the Deadwood is the basal conglomerate where the monazite occurs as reddish-brown, pepper-sized crystals in a limonitic cement that binds rounded to sub-rounded quartz pebbles. The monazite in the conglomerate runs approximately 0.75%. Values as high as 1.8% are also reported, but these are not consistent.

The overlying dense sandstones of the Deadwood also contain monazite, but the values are smaller running approximately 0.3%. There also is some monazite higher in the Deadwood section, but it is not sufficiently concentrated for exploitation. The shales are noticeably barren, however.

Although the monazite is generally found at the same stratigraphic horizons (basal Deadwood conglomerate and sandstone), it is not always found at the same topographic position. In addition, the basal conglomerate is not always present. In places the basal Deadwood rests upon a decomposed granitic (?) zone, and in other places rests upon a relatively unaltered granitic-type rock.

The basal conglomerate is very lenticular and not too persistent. It seems to have been deposited upon an old granite surface of some topographic relief. Since the area, over which the monazite is found, is a rolling upland, the above-mentioned factors make a large number of test pits necessary for exploration purposes.

The source of the monazite may be the granite that underlies the Deadwood, but Frank Osterwald reports very little monazite present in the granite several miles to the east of this locality. It seems more probable that the monazite may have been derived from pegmatites and concentrated in pockets along ancient beaches or bars.

Traces of uranium and some zircon are found associated with the monazite in the Deadwood basal conglomerate.

The values of the Quaternary placers are reported to vary from five to seven pounds of monazite per ton.

Both lode and placer claims are filed. Since the lode claims are filed in the Deadwood formation, it would be more correct to

distinguish them as placers since the monazite has been transported and reconcentrated.

Conclusion

The deposit seems to have considerable promise, depending of course, upon the horizontal extent and consistency of assays of the monazite. The deposit could easily be mined by stripping with earth-moving equipment, and then concentrated by a number of Humphrey spiral separators. The magnetic separator could probably be used to separate and concentrate the Quaternary placer deposits.

Signed

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